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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/763,481	04/23/2001	Axel Noethe	1-15247	7474

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EXAMINER	
MCDONALD, RODNEY GLENN	
ART UNIT	PAPER NUMBER
1753	14

DATE MAILED: 08/21/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)
	09/763,481	NOETHE ET AL.
	Examiner	Art Unit
	Rodney G. McDonald	1753

-- The MAILING DATE of this communication appears on the cover sh et with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *25 July 2003* .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *14-26 and 29* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *14-26 and 29* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other:

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on July 25, 2003 has been entered.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 14-26 and 29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wandke (DE 43 05 414 A1) in view of Giron (U.S. Pat. 6,277,523).

Wandke teach coating a substrate with a metal oxide layer especially a stannic oxide layer, in a vacuum in which a corresponding metal target is inserted into a corresponding chamber and eroded, and this erosion coats the substrate, whereby an oxygen-containing plasma arising from a corresponding basic gas mixture is created in the area between the target and substrate. (Page 1)

The problem is solved according to the invention using the initially-described coating procedure by using a balanced oxidizing and reducing basic gas mixture consisting of at least 20 percent by volume oxygen, hydrogen and a gaseous hydrocarbon or halogenated hydrocarbon in the coating procedure. (Page 1)

It is also advantageous when the described mixture also contains 5-40 percent by volume argon. (Page 1)

Examples of effective gas mixtures have the following compositions:

20-30 percent by volume H_2, 20-50 percent by volume O_2, 20-30 percent by volume hydrocarbons or fluorocarbons with the remainder argon. (Page 2)

The figure shows a block diagram of a sputtering system according to the invention; in particular, an associated sputtering chamber 1 is shown. A substrate 2, e.g. a glass pane, is on the floor of the sputtering chamber. Opposite the glass pane in the sputtering chamber is a negatively poled target 3 (e.g. consisting of pure tin) on a holder 4. A gas supply 5 and a gas exhaust 6 are connected to the chamber. Also on

the side of the chamber is an anode 7 consisting of steel or copper that is required for the ion stream (sputtering effect). (Page 2)

The flat glass workpiece is coated with a stannic oxide layer as follows: Tin atoms are knocked out of the intended target 3 by a stream of ion from the target, oxidize in the oxygen-containing atmosphere in the sputtering chamber to form SnO, and are deposited on the substrate 2, i.e., the glass surface. Usually the SnO layer forms the base layer of a multilayer system applied on the glass. The ***pressure*** during formation of such a layer is approximately ***0.01-20 mbar***, which is set by suitably feeding and removing the treatment gas by the corresponding devices 5 and 6. (Page 2 and 3) The gaseous atmosphere inherently will reduce the blind charge.

The differences between Wandke and the present claims is that the hydrocarbon being saturated is not discussed, the saturated hydrocarbon being one of methane, ethane, propane or butane is not discussed, the volumetric ratio of added hydrocarbon to added oxygen is not discussed, the volumetric ratio of added noble gas to oxygen is not discussed, the tin oxide layer being electrochromic is not discussed, the target being tungsten is not discussed, the target containing molybdenum, titanium, cerium, vanadium and/or zirconium is not discussed and the thickness of the electrochromic layer is not discussed.

Wandke's "gaseous hydrocarbons" encompass saturated hydrocarbons such as methane, ethane, propane or butane and therefore teach applicant's claim limitations. (See Wandke discussed above)

Wandke disclose utilizing 20 percent O_2 and 20 percent hydrocarbon this is in a ratio of hydrocarbon to oxygen of 1:1. (See Wandke discussed above)

Wandke disclose 5-40 percent Ar and 20-50 percent O_2 this range allows for a ratio of argon to oxygen of 1:1. (See Wandke discussed above)

Giron teach an inhibited ***electrochromic*** layer of ***WO_3***, Nb_2O_3, ***SnO_2***, Bi_2O_3, ***TiO_2***, ***V_2O_5***, hydrogenated nickel oxide or MoO_3 material, which exists in a decolored or only slightly, colored state. (Column 16 lines 10-22)

All the oxide-based layers are obtained by this technique using a metal target, but in a reactive atmosphere containing oxygen. (Column 9 lines 37-40) Since Giron teach utilizing a metal target to deposit the corresponding metal oxide it would be obvious to utilize targets containing tungsten, molybdenum, titanium, cerium, vanadium and/or zirconium.

Giron teach a layer of electrochromic material based on tungsten oxide of 350 nm thickness. (Column 10 lines 11-12)

The motivation for depositing electrochromic layers utilizing targets of metals for depositing the particular compositions of the layers in particular atmospheres at particular thicknesses by sputtering is that it allows for simplifying the method of manufacturing of the electrochromic devices. (Column 2 lines 28-32)

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified Wandke by depositing electrochromic layers utilizing targets of metals for depositing the particular compositions of the layers in particular atmospheres at particular thicknesses by sputtering as taught by Giron

because it allows for simplifying the method of manufacturing of the electrochromic devices.

Claims 14-26 and 29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Giron (U.S. Pat. 6,277,523) in view of Wandke (De 43 05 414 A1).

Giron is discussed above and all is as applies above. (See Giron discussed above) The oxide layer films are obtained using a metal target, sputtering in argon but in a reactive atmosphere containing oxygen and optionally hydrogen and/or water vapor. (Column 9 lines 37-40)

The differences between Giron and the present claims is the utilization of gaseous hydrocarbons for sputtering, the hydrocarbon being saturated is not discussed, the saturated hydrocarbon being one of methane, ethane, propane or butane is not discussed, the volumetric ratio of added hydrocarbon to added oxygen is not discussed, the volumetric ratio of added noble gas to oxygen is not discussed and the total pressure is not discussed.

Wandke is discussed above and all is as applies above. (See Wandke discussed above)

Wandke's "gaseous hydrocarbons" encompass saturated hydrocarbons such as methane, ethane, propane or butane and therefore teach applicant's claim limitations. (See Wandke discussed above)

Wandke disclose utilizing 20 percent O_2 and 20 percent hydrocarbon this is in a ratio of hydrocarbon to oxygen of 1:1. (See Wandke discussed above)

Wandke disclose 5-40 percent Ar and 20-50 percent O_2 this range allows for a ratio of argon to oxygen of 1:1. (See Wandke discussed above)

Wandke's total pressure is 0.01 to 20 mbar. (Page 2 and 3)

The motivation for utilizing a hydrocarbon in the sputtering atmosphere at particular ratios and particular pressures during sputtering of the metal oxide is that it allows for inhibiting the target from being coating with oxides which influences the coating rate. (Page 1)

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified Giron by utilizing a hydrocarbon in the sputtering atmosphere at particular ratios and particular pressures during sputtering of metal oxides as taught by Wandke because it allows for inhibiting the target from being coated with oxides which influences the coating rate.

Response to Arguments

Applicant's arguments filed July 25, 2003 have been fully considered but they are not persuasive.

The 35 U.S.C. 102 rejection has been overcome.

RESPONSE TO THE ARGUMENTS OF THE 35 U.S.C. 103 REJECTIONS:

In response to the argument that Wandke is not combinable with Giron because tin oxide is unsuitable as an electrochromic coating, it is argued that the references are combinable because Giron at least suggest tin oxide as a layer for electrochromic use, which involves the insertion of H+ ions. (See Giron Column 16 lines 10-22; Giron Column 4 lines 13-29)

In response to the argument that one would not look to Wandke to modify the atmosphere of Giron because Wandke's stannic oxide layers are unsuitable for electrochromic coatings using lithium charge carriers as recognized by Giron, it is argued that Giron recognize utilizing tin oxide layers as electrochromic coatings. The tin oxide layers can be utilized for H+ ion insertion. Applicant's claims require the coatings to be electrochromic, which Giron specifically recognize tin oxide to be. (See Giron discussed above)

In response to the argument that one would not look to Wandke's atmosphere because Wandke does not recognize the effects the atmosphere has on the electrochromic layer, it is argued that Wandke recognize the benefit of incorporating a hydrocarbon during the sputtering of a metal oxide. The benefit for incorporating the hydrocarbon is that it prevents oxidation of the target surface which effects the coating rate. (See Wandke discussed above)

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Rodney G. McDonald whose telephone number is 703-308-3807. The examiner can normally be reached on M- Th with Every other Friday off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nam X. Nguyen can be reached on 703-308-3322. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9310 for regular communications and 703-872-9310 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0661.

Rodney G. McDonald
Primary Examiner
Art Unit 1753

RM
August 8, 2003